

CLAIMS

The embodiment of the invention in which an exclusive property or privilege is claimed is defined as follows

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- 1 1. A device for heat-treating water, the device comprising:
 - 2 a) a confined heating zone;
 - 3 b) a means for transporting the water to said confined heating zone so as to
4 facilitate heating of the water;
 - 5 c) a means for preventing the heated water from leaving the device until
6 pathogens entrained in the heated water are killed; and
 - 7 d) a means for preventing pathogens entrained in unheated water from
8 leaving the device.
 - 1 2. The device as recited in claim 1 wherein the means for preventing
2 pathogens from leaving the device further comprises an antimicrobial substrate.
 - 1 3. The device as recited in claim 1 wherein the means for preventing heated
2 water from leaving the device includes a plurality of valves actuated by programmable
3 logic controllers.
 - 1 4. The device as recited in claim 1 wherein the heating zone is subjected to

2 to exhaust gas from a gas-fired combustion.

1 5. The device as recited in claim 4 further comprising a zone for imparting
2 low pressure to the exhaust gas.

1 6. The device as recited in claim 6 wherein the zone for imparting low
2 pressure to the exhaust gas is intermediate the antimicrobial substrate and the heating
3 zone.

1 7. The device as recited in claim 1 wherein the water is heated to below its
2 boiling point.

1 8. The device as recited in claim 1 wherein the confined heating zone con-
2 tains a means for heating the fluid and the step of subjecting the fluid to the controlled
3 atmosphere further comprises injecting the fluid into the controlled atmosphere at a fluid
4 flow defined by the following equation:

5
$$\text{BTU/hr of the heater} / (Y \times \Delta T)$$

6 wherein

7
$$\Delta T = (\text{Required Kill Temperature} - \text{Coldest possible inlet fluid temperature})$$

8 and where Y is derived from the following formula:

9
$$- (\text{Specific heat of the fluid to be heated} \times \text{Weight of the fluid to be heated} \times$$

10
$$\text{minutes in one hour}).$$

1 9. A method for reclaiming fluid contaminated with pathogens, the method
2 comprising:

3 a) providing a heated, controlled atmosphere;

4 b) subjecting the fluid to the controlled atmosphere for a time and at a
5 temperature sufficient to kill pathogens entrained in a liquid phase of the fluid;

6 c) subjecting an aerosolized phase of the fluid to an antimicrobial substrate;

7 d) releasing the liquid phase and the aerosolized phase to the ambient
8 environment.

1 10. The method as recited in claim 9 wherein the controlled atmosphere has a
2 positive pressure flow leading to the ambient environment.

1 11. The method as recited in claim 9 wherein the fluid is water.

1 12. The method as recited in claim 9 wherein the temperature is below the
2 condensation point of the fluid.

1 13. The method as recited in claim 9 wherein the controlled atmosphere con-
2 tains a means for heating the fluid and the step of subjecting the fluid to the controlled
3 atmosphere further comprises injecting the fluid into the controlled atmosphere at a fluid
4 flow defined by the following equation:

5 $\text{BTU/hr of the heater } \dot{Q} (Y \times \Delta T)$

6 wherein

7 $\Delta T = (\text{Required Kill Temperature} - \text{Coldest possible inlet fluid temperature})$

8 and where Y is derived from the following formula:

9 $(\text{Specific heat of the fluid to be heated} \times \text{Weight of the fluid to be heated} \times$
10 $\text{minutes in one hour}).$